IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Canceled).

Claim 2 (Currently Amended): The method according to ~~Claim 1~~Claim 3, wherein the spreading sequence ($s_k(t)$) consist of real multiples ($s_k^0(t)$) of a corresponding complex coefficient (σ).

Claim 3 (Currently Amended): ~~The method according to Claim 1,~~ A method of processing a received signal, comprising:

detecting within said received signal a plurality of possible symbols ($d_k(i)$) transmitted by or for a plurality *K* of users, each of the plurality of possible symbols belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence ($s_k(t)$), said step of detecting comprising substeps of:

filtering said received signal, said filtering step adapted for supplying a complex vector characteristic of said received signal, and including decomposing said complex vector into a real vector ($y^R(i)$) and an imaginary vector ($y^I(i)$);

searching separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points (Λ,Ω) corresponding to said modulation constellation; and

estimating the transmitted symbols from components of said closest neighbor of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols,

wherein the step of searching is limited to a first set of points in the real lattice belonging to a first predetermined zone (Σ_R) around the real vector and a second set of points

in the imaginary lattice belonging to a second predetermined zone (Σ_I) around the imaginary vector.

Claim 4 (Currently Amended): ~~The method according to Claim 1,~~ A method of processing a received signal, comprising:

detecting within said received signal a plurality of possible symbols ($d_k(i)$) transmitted by or for a plurality K of users, each of the plurality of possible symbols belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence ($s_k(t)$), said step of detecting comprising substeps of:

filtering said received signal, said filtering step adapted for supplying a complex vector characteristic of said received signal, and including decomposing said complex vector into a real vector ($y^R(i)$) and an imaginary vector ($y^I(i)$);

searching separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points (Λ,Ω) corresponding to said modulation constellation; and

estimating the transmitted symbols from components of said closest neighbor of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols,

wherein the step of searching is limited to a first set of points in the real lattice belonging to a first predetermined zone (Σ_R) around the origin and a second set of points in the imaginary lattice belonging to a second predetermined zone (Σ_I) around the origin.

Claim 5 (Previously Presented): The method according to Claim 3, wherein said first and second predetermined zones (Σ_R and Σ_I) are spheres of probability.

Claim 6 (Currently Amended): ~~The method according to Claim 1,~~ A method of processing a received signal, comprising:

detecting within said received signal a plurality of possible symbols ($d_k(i)$) transmitted by or for a plurality *K* of users, each of the plurality of possible symbols belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence ($s_k(t)$), said step of detecting comprising substeps of:

filtering said received signal, said filtering step adapted for supplying a complex vector characteristic of said received signal, and including decomposing said complex vector into a real vector ($y^R(i)$) and an imaginary vector ($y^I(i)$);

searching separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points (Λ,Ω) corresponding to said modulation constellation; and

estimating the transmitted symbols from components of said closest neighbor of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols,

wherein the step of searching closest neighbor of the real vector includes searching a plurality of components thereof, the searching of the plurality of components being limited for each of said components to an interval defined for a lower bound and an upper bound, said upper and lower bounds being chosen so that said interval excludes points relating to symbols which mathematically cannot belong to the modulation constellation.

Claim 7 (Currently Amended): ~~The method according to Claim 1,~~ A method of processing a received signal, comprising:

detecting within said received signal a plurality of possible symbols ($d_k(i)$) transmitted by or for a plurality *K* of users, each of the plurality of possible symbols belonging to a

modulation constellation and being the subject of a spectral spreading by a spreading sequence ($s_k(t)$), said step of detecting comprising substeps of:

filtering said received signal, said filtering step adapted for supplying a complex vector characteristic of said received signal, and including decomposing said complex vector into a real vector ($y^R(i)$) and an imaginary vector ($y^I(i)$);

searching separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points (Λ,Ω) corresponding to said modulation constellation; and

estimating the transmitted symbols from components of said closest neighbor of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols,

wherein the step of searching for the closest neighbor of the imaginary vector includes searching a plurality of components thereof, the searching a plurality of components being limited for each of said components to an interval defined for a lower bound and an upper bound, said upper and lower bounds being chosen so that said interval excludes points relating to symbols which mathematically cannot belong to the modulation constellation.

Claim 8 (Currently Amended): The method according to ~~Claim 1~~Claim 3, wherein, prior to the search for the closest neighbor of the real vector, the real vector ($y^R(i)$) is subjected to a matrix processing ~~(320)~~ to substantially decorrelate different noise components thereof.

Claim 9 (Currently Amended): The method according to Claim 3~~Claim 1~~, wherein, prior to the search for the closest neighbor of the imaginary vector, the imaginary vector

($y^I(i)$) is subjected to a matrix processing ~~(321)~~ to substantially decorrelate different noise components thereof.

Claim 10 (Currently Amended): ~~The method according to Claim 1,~~ A method of processing a received signal, comprising:

detecting within said received signal a plurality of possible symbols ($d_k(i)$) transmitted by or for a plurality K of users, each of the plurality of possible symbols belonging to a modulation constellation and being the subject of a spectral spreading by a spreading sequence ($s_k(t)$), said step of detecting comprising substeps of:

filtering said received signal, said filtering step adapted for supplying a complex vector characteristic of said received signal, and including decomposing said complex vector into a real vector ($y^R(i)$) and an imaginary vector ($y^I(i)$);

searching separately for at least a closest neighbor of the real vector and a closest neighbor of the imaginary vector within a respective real and imaginary lattice of points (Λ,Ω) corresponding to said modulation constellation; and

estimating the transmitted symbols from components of said closest neighbor of the real vector and the closest neighbor of the imaginary vector so as to produce a vector of estimated symbols,

wherein said step of searching includes searching for a first set of points which are closest to said real vector and searching for a second set of points which are closest to said imaginary vector and in that the transmitted symbols are estimated via a soft detection from symbols corresponding to said first and second sets, and a first set of distances separating points of said first set from said real vector and a second distance set of distances separating points of said second set from said imaginary vector.

Claim 11 (Currently Amended): The method according to ~~Claim 1~~Claim 3, wherein contributions of each user to the received signal obtained by the filtering step are determined from the estimated symbol and in that, for a given user k, contributions of other users to the received signal corresponding to transmitted symbols already estimated are eliminated after the filtering step.

Claim 12 (Currently Amended): The method according to ~~Claim 1~~Claim 3, wherein contributions of each user to the received signal are determined from the estimated symbol and in that, for a given user k, contributions of other users to the received signal corresponding to transmitted symbols already estimated are eliminated before the filtering step.

Claim 13 (Currently Amended): The method according to ~~Claim 1~~Claim 3, wherein, the symbols of said K users are transmitted synchronously, and said lattice of points is of dimension K.

Claim 14 (Previously Presented): The method according to Claim 11, wherein, the symbols of said K users are transmitted asynchronously and propagated along a plurality of paths, and a dimension of the lattice is equal to a number of symbols of the different users which are mathematically possible interfering symbols and are not yet estimated.

Claim 15 (Currently Amended): A communication device, comprising:

a processor configured to implement the method recited in any one of ~~Claims 1-14~~Claims 2-14.

Claim 16 (Previously Presented): A receiver for a DS-CDMA mobile telecommunication system comprising the communication device recited in Claim 15.